



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.         | CONFIRMATION NO. |
|---|-------------|----------------------|-----------------------------|------------------|
| 09/401,660  | 09/23/1999  | MASAAKI NAKABAYASHI  | 684.2902                    | 4966             |
| 5514  | 7590        | 06/06/2005           |                             |                  |
| FITZPATRICK CELLA HARPER & SCINTO<br>30 ROCKEFELLER PLAZA<br>NEW YORK, NY 10112 |             |                      | EXAMINER<br>CHANG, AUDREY Y |                  |
|   |             |                      | ART UNIT<br>2872            | PAPER NUMBER     |

DATE MAILED: 06/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

57

|                              |                               |                                    |  |
|------------------------------|-------------------------------|------------------------------------|--|
| <b>Office Action Summary</b> | Application No.<br>09/401,660 | Applicant(s)<br>NAKABAYASHI ET AL. |  |
|                              | Examiner<br>Audrey Y. Chang   | Art Unit<br>2872                   |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 March 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 29 and 32-34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 29 and 32-34 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Remark*

- This Office Action is in response to applicant's amendment filed on March 28, 2005, which has been entered into the file.
- By this amendment, the applicant has amended claims 29, had canceled claims 24, 28, 30 and 31 and has newly added claims 32-34.
- Claims 28, and 32-34 remain pending in this application.
- The obvious type double patenting rejections of claims 24 and 28 set forth in the previous Office Action are **withdrawn** in response to the *cancellation* of these claims.

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 29 and newly added claims 32-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Chou (PN. 5,772,905) in view of the patents issued to Sarofeen (PN. 3,894,710) and Ishii (PN. 6,157,488).

*Claim 29 has been significantly amended and the newly added claims 32-34 have introduced new subject matters that necessitate new grounds of rejections.*

Chou teaches a *method* for making an optical element having *periodic structure* (16, Figure 9), wherein a *mold* (10) having the periodic structure (16), serves as the second periodic structure, is used to form the structure on a thin film (20) placed on a *substrate* (18). Chou teaches that the *alignment* of the

Art Unit: 2872

mold is achieved by engaging an alignment mark (64) placed on the mold with another alignment mark (68) placed on the substrate, (please see Figure 9).

**The amended claim 29 and newly added claim 32** recite the periodic structure is a diffractive grating. The periodic structure disclosed by Chou shows to have grating structure, (please see 16, Figure 9). It is also implicitly true that the periodic structure of Chou will serve as a diffraction grating for the light with suitable wavelength. The diffraction property of the grating or periodic structure is determined by the grating size with respect to the wavelength of the incident light.

**The amended claim 29 and newly added claim 32** further recite the alignment mark on the mold is in the form of recess or protrusion and is aligned with the alignment mark on the substrate in the form of protrusion or recess. Chou teaches the idea of *aligning* alignment marks formed on the mold and the substrate to align the mold so that the position for forming the grating can be accurately determined. However it does not teach explicitly that the alignment marks are of recess/protrusion. However using recess and protrusion alignment marks on the molds to ensure the molding position of an optical element is rather well known in the art as demonstrated by the teachings of Sarofeen. Sarofeen teaches explicitly to form *alignment nubs* (3, or protrusions) and *alignment detents* (4 or recess) on the mold (1, Figures 1-3) and the engaging substrate (2), respectively, such that by aligning the nubs with the detents the mold can be aligned with the engaging substrate accurately, (please see Figures 1-3 and column 5, lines 52-69). It would then have been obvious to one skilled in the art to apply the teachings of Sarofeen to replace the alignment marks of Chou with physical engaging recess and protrusion for the benefit of using alternative physical arrangement to achieve the alignment to reduce cost in the manufacture process.

These references also do not teach that the second diffraction grating is formed on a first diffraction grating. However forming second diffraction grating on top of a first diffraction grating, i.e. forming layer structure diffraction grating are rather well known in the art as demonstrated by the teachings of Ishii wherein a second diffraction grating (4, or 12) is formed on a first diffraction grating

Art Unit: 2872

for the benefit of making an optical element with desired optical characteristics such as aberrations correction. With regard to newly added claims 33-34, this means the first diffraction grating is formed on the substrate on which the second diffraction grating is molded into. It would then have been obvious to modify and apply the method disclosed by Chou to form layer diffraction grating for the benefit of expanding the applicability of method.

### *Response to Arguments*

3. Applicant's arguments with respect to claim 29 and newly added claims 32-34 have been considered but are moot in view of the new ground(s) of rejection.

### *Conclusion*

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 571-272-2309. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

Art Unit: 2872

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A. Chang, Ph.D.

*Audrey Y. Chang*  
*Primary Examiner*  
*Art Unit 2872*

